

# Deviation Summary

PICEANCE VLY

## 1 General

### 1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

### 1.2 Well/Wellbore Information

Well	PA 42-21	Wellbore No.	00
Wellbore Legal Name	PA 42-21	Common Wellbore Name	PA 42-21
Project	PA 21-06S-095W	Site	PA 22-21 Pad
Vertical Section Azimuth	74.40 (°)	North reference	True
Origin N/S		Origin E/W	
Spud date	2/15/2014	UWI	PA 42-21
Active datum	KB @6,056.0ft (above Mean Sea Level)		

## 2 Survey Name

### 2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	2/15/2014	Ended	2/25/2014
Tool Name	MWD	Engineer	

#### 2.1.1 Tie On Point

MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	E/W (ft)
0.0	0.00	0.00	0.00	0.00	0.00

#### 2.1.2 Survey Stations

Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. sec. (ft)	DLS (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
2/15/2014	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/15/2014	NORMAL	102.0	0.44	7.47	102.00	0.39	0.05	0.15	0.43	0.43	0.00	7.47
	NORMAL	131.0	1.14	72.77	131.00	0.58	0.34	0.49	3.57	2.41	225.17	87.99
	NORMAL	161.0	1.06	83.94	160.99	0.70	0.90	1.06	0.76	-0.27	37.23	115.98
	NORMAL	192.0	1.85	76.99	191.98	0.84	1.67	1.84	2.61	2.55	-22.42	343.92
	NORMAL	222.0	1.85	68.91	221.97	1.13	2.60	2.81	0.87	0.00	-26.93	265.96
	NORMAL	253.0	2.99	81.56	252.94	1.43	3.86	4.11	4.04	3.68	40.81	31.51
	NORMAL	283.0	3.78	80.60	282.88	1.70	5.61	5.87	2.64	2.63	-3.20	355.42
	NORMAL	313.0	4.13	77.70	312.81	2.09	7.65	7.93	1.34	1.17	-9.67	328.80
	NORMAL	343.0	4.75	79.45	342.72	2.55	9.92	10.24	2.12	2.07	5.83	13.20
	NORMAL	374.0	5.63	78.66	373.60	3.09	12.68	13.04	2.85	2.84	-2.55	354.96
	NORMAL	404.0	5.72	75.85	403.45	3.74	15.57	16.00	0.97	0.30	-9.37	286.55
	NORMAL	435.0	6.16	74.09	434.28	4.57	18.67	19.21	1.54	1.42	-5.68	336.64
	NORMAL	465.0	6.86	67.41	464.09	5.70	21.87	22.60	3.43	2.33	-22.27	309.40
2/16/2014	NORMAL	525.0	8.09	70.05	523.58	8.52	29.14	30.36	2.13	2.05	4.40	16.91
	NORMAL	556.0	8.45	72.51	554.26	9.95	33.37	34.81	1.63	1.16	7.94	45.73
	NORMAL	586.0	8.89	75.32	583.91	11.20	37.71	39.33	2.04	1.47	9.37	45.31
	NORMAL	616.0	9.94	79.45	613.51	12.26	42.50	44.23	4.16	3.50	13.77	34.81
	NORMAL	647.0	10.12	77.78	644.04	13.33	47.79	49.62	1.10	0.58	-5.39	300.93
	NORMAL	677.0	11.09	80.60	673.52	14.36	53.21	55.12	3.67	3.23	9.40	29.54
	NORMAL	707.0	11.17	79.89	702.96	15.34	58.92	60.88	0.53	0.27	-2.37	299.92

## 2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. sec. (ft)	DLS (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
2/16/2014	NORMAL	737.0	12.40	81.30	732.33	16.34	64.97	66.97	4.21	4.10	4.70	13.87
	NORMAL	768.0	12.84	79.54	762.58	17.46	71.64	73.70	1.88	1.42	-5.68	317.99
	NORMAL	798.0	13.46	79.80	791.79	18.69	78.36	80.50	2.08	2.07	0.87	5.58
	NORMAL	868.0	15.08	76.73	859.63	22.22	95.24	97.71	2.55	2.31	-4.39	333.47
	NORMAL	958.0	17.41	73.39	946.03	28.76	119.54	122.87	2.79	2.59	-3.71	336.54
	NORMAL	1,053.0	19.69	72.07	1,036.09	37.75	148.39	153.08	2.44	2.40	-1.39	348.94
	NORMAL	1,148.0	21.85	72.60	1,124.91	47.96	180.49	186.74	2.28	2.27	0.56	5.22
	NORMAL	1,244.0	24.13	72.42	1,213.28	59.23	216.25	224.21	2.38	2.38	-0.19	358.15
	NORMAL	1,339.0	26.42	72.86	1,299.18	71.33	254.96	264.75	2.42	2.41	0.46	4.89
	NORMAL	1,434.0	28.66	74.36	1,383.41	83.70	297.10	308.67	2.47	2.36	1.58	17.87
	NORMAL	1,530.0	30.95	74.80	1,466.71	96.38	343.10	356.38	2.40	2.39	0.46	5.65
	NORMAL	1,624.0	32.62	75.32	1,546.61	109.14	390.94	405.89	1.80	1.78	0.55	9.54
	NORMAL	1,719.0	33.85	76.38	1,626.07	121.86	441.43	457.94	1.43	1.29	1.12	25.73
	NORMAL	1,814.0	34.77	77.52	1,704.54	133.95	493.59	511.43	1.18	0.97	1.20	35.40
2/17/2014	NORMAL	1,910.0	34.77	77.70	1,783.40	145.69	547.06	566.09	0.11	0.00	0.19	90.07
	NORMAL	2,005.0	35.65	76.20	1,861.02	158.07	600.42	620.81	1.30	0.93	-1.58	314.88
2/18/2014	NORMAL	2,101.0	36.35	76.06	1,938.68	171.60	655.20	677.21	0.73	0.73	-0.15	353.24
	NORMAL	2,196.0	36.75	74.71	2,015.00	185.87	709.94	733.77	0.95	0.42	-1.42	295.91
	NORMAL	2,312.0	37.89	73.65	2,107.25	205.05	777.60	804.09	1.13	0.98	-0.91	330.17
	NORMAL	2,407.0	38.46	72.25	2,181.93	222.27	833.73	862.79	1.09	0.60	-1.47	302.82
	NORMAL	2,503.0	39.34	71.81	2,256.64	240.87	891.07	923.02	0.96	0.92	-0.46	342.40
	NORMAL	2,598.0	40.62	70.75	2,329.44	260.47	948.87	983.97	1.53	1.35	-1.12	331.58
	NORMAL	2,693.0	40.97	70.67	2,401.36	280.97	1,007.46	1,045.91	0.37	0.37	-0.08	351.48
	NORMAL	2,789.0	42.46	71.54	2,473.02	301.65	1,067.90	1,109.68	1.67	1.55	0.91	21.56
	NORMAL	2,884.0	42.02	73.56	2,543.35	320.81	1,128.81	1,173.50	1.50	-0.46	2.13	108.70
	NORMAL	2,979.0	42.07	75.41	2,613.90	337.82	1,190.11	1,237.12	1.31	0.05	1.95	88.38
	NORMAL	3,074.0	41.54	74.53	2,684.72	354.24	1,251.27	1,300.44	0.83	-0.56	-0.93	227.57
	NORMAL	3,170.0	42.37	78.22	2,756.12	369.34	1,313.63	1,364.56	2.71	0.86	3.84	72.78
	NORMAL	3,265.0	42.02	74.88	2,826.51	384.17	1,375.67	1,428.30	2.39	-0.37	-3.52	259.90
	NORMAL	3,360.0	41.93	76.99	2,897.14	399.61	1,437.29	1,491.81	1.49	-0.09	2.22	94.43
2/19/2014	NORMAL	3,455.0	42.02	77.26	2,967.77	413.77	1,499.23	1,555.27	0.21	0.09	0.28	63.61
	NORMAL	3,551.0	41.71	76.55	3,039.26	428.28	1,561.63	1,619.28	0.59	-0.32	-0.74	236.54
	NORMAL	3,646.0	41.54	75.76	3,110.28	443.38	1,622.90	1,682.35	0.58	-0.18	-0.83	251.75
	NORMAL	3,741.0	41.63	75.50	3,181.33	459.03	1,683.98	1,745.39	0.20	0.09	-0.27	297.45
	NORMAL	3,836.0	41.76	74.71	3,252.27	475.27	1,745.05	1,808.58	0.57	0.14	-0.83	283.60
	NORMAL	3,932.0	40.97	74.27	3,324.32	492.24	1,806.18	1,872.02	0.88	-0.82	-0.46	200.04
	NORMAL	4,027.0	40.75	73.30	3,396.17	509.59	1,865.86	1,934.16	0.71	-0.23	-1.02	250.51
	NORMAL	4,122.0	40.53	73.68	3,468.26	527.78	1,925.00	1,996.01	0.59	-0.23	-0.83	246.55
	NORMAL	4,218.0	41.27	73.39	3,540.82	546.20	1,985.09	2,058.85	0.98	0.78	0.92	38.09
	NORMAL	4,313.0	41.41	73.04	3,612.14	564.32	2,045.17	2,121.59	0.28	0.14	-0.37	300.33
	NORMAL	4,408.0	41.01	72.95	3,683.61	582.63	2,105.02	2,184.16	0.43	-0.42	-0.09	188.40
	NORMAL	4,504.0	42.11	74.36	3,755.44	600.54	2,166.13	2,247.83	1.50	1.15	1.47	40.91
	NORMAL	4,599.0	41.63	74.44	3,826.19	617.59	2,227.20	2,311.24	0.51	-0.51	0.08	173.68
	NORMAL	4,694.0	40.97	74.44	3,897.56	634.41	2,287.60	2,373.94	0.69	-0.69	0.00	180.00
2/20/2014	NORMAL	4,790.0	41.19	73.30	3,969.92	651.94	2,348.20	2,437.02	0.81	0.23	-1.19	285.94
	NORMAL	4,884.0	40.53	72.69	4,041.01	669.92	2,407.01	2,498.49	0.82	-0.70	-0.65	210.93
	NORMAL	4,979.0	41.27	73.13	4,112.82	688.20	2,466.46	2,560.67	0.84	0.78	0.46	21.44
	NORMAL	5,074.0	39.91	72.77	4,184.96	706.32	2,525.56	2,622.46	1.45	-1.43	-0.38	189.64
	NORMAL	5,170.0	40.40	74.71	4,258.34	723.64	2,584.98	2,684.36	1.40	0.51	2.02	69.35
	NORMAL	5,265.0	39.38	74.53	4,331.23	739.80	2,643.72	2,745.28	1.08	-1.07	-0.19	186.39
	NORMAL	5,361.0	38.90	74.36	4,405.68	756.05	2,702.10	2,805.88	0.51	-0.50	-0.18	192.54
	NORMAL	5,456.0	37.67	72.95	4,480.25	772.60	2,758.58	2,864.73	1.59	-1.29	-1.48	214.79
	NORMAL	5,552.0	35.87	74.18	4,557.15	788.87	2,813.69	2,922.18	2.03	-1.88	1.28	158.28
	NORMAL	5,648.0	34.46	74.88	4,635.63	803.63	2,866.97	2,977.47	1.53	-1.47	0.73	164.33
	NORMAL	5,743.0	31.52	75.76	4,715.30	816.75	2,917.00	3,029.18	3.14	-3.09	0.93	171.11
	NORMAL	5,837.0	29.89	72.69	4,796.13	829.76	2,963.18	3,077.17	2.41	-1.73	-3.27	222.57



## 2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. sec. (ft)	DLS (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
2/20/2014	NORMAL	5,933.0	29.32	73.39	4,879.59	843.60	3,008.55	3,124.58	0.69	-0.59	0.73	149.06
	NORMAL	6,028.0	27.12	73.83	4,963.30	856.28	3,051.64	3,169.49	2.33	-2.32	0.46	174.79
	NORMAL	6,124.0	26.20	73.92	5,049.09	868.24	3,093.02	3,212.56	0.96	-0.96	0.09	177.53
	NORMAL	6,219.0	25.27	72.51	5,134.67	880.15	3,132.51	3,253.80	1.17	-0.98	-1.48	212.72
	NORMAL	6,315.0	23.60	72.77	5,222.07	892.00	3,170.41	3,293.49	1.74	-1.74	0.27	176.43
	NORMAL	6,411.0	22.95	73.21	5,310.25	903.10	3,206.68	3,331.42	0.70	-0.68	0.46	165.23
	NORMAL	6,506.0	22.29	74.27	5,397.95	913.33	3,241.76	3,367.95	0.82	-0.69	1.12	148.78
	NORMAL	6,601.0	21.14	75.32	5,486.20	922.56	3,275.67	3,403.10	1.28	-1.21	1.11	161.82
	NORMAL	6,697.0	19.91	75.76	5,576.11	930.97	3,308.26	3,436.75	1.29	-1.28	0.46	173.04
	NORMAL	6,793.0	17.98	76.29	5,666.90	938.50	3,338.51	3,467.91	2.02	-2.01	0.55	175.16
	NORMAL	6,889.0	16.44	74.18	5,758.60	945.72	3,365.97	3,496.30	1.73	-1.60	-2.20	201.06
	NORMAL	6,984.0	15.47	75.50	5,849.94	952.55	3,391.18	3,522.41	1.09	-1.02	1.39	160.12
	NORMAL	7,080.0	14.15	76.91	5,942.75	958.42	3,415.00	3,546.94	1.43	-1.38	1.47	165.41
	NORMAL	7,173.0	13.49	76.29	6,033.06	963.56	3,436.61	3,569.14	0.73	-0.71	-0.67	192.35
2/21/2014	NORMAL	7,270.0	12.75	72.25	6,127.53	969.51	3,457.80	3,591.14	1.21	-0.76	-4.16	229.14
2/22/2014	NORMAL	7,365.0	12.97	72.25	6,220.14	975.95	3,477.94	3,612.27	0.23	0.23	0.00	0.00
	NORMAL	7,460.0	11.03	69.35	6,313.06	982.41	3,496.59	3,631.98	2.14	-2.04	-3.05	195.85
	NORMAL	7,556.0	8.97	70.67	6,407.60	988.12	3,512.25	3,648.60	2.16	-2.15	1.38	174.30
	NORMAL	7,651.0	7.56	70.93	6,501.61	992.62	3,525.15	3,662.22	1.48	-1.48	0.27	178.61
	NORMAL	7,746.0	5.50	70.13	6,595.99	996.21	3,535.34	3,673.00	2.17	-2.17	-0.84	182.13
	NORMAL	7,841.0	5.05	71.37	6,690.59	999.09	3,543.58	3,681.72	0.49	-0.47	1.31	166.40
	NORMAL	7,936.0	4.66	76.03	6,785.25	1,001.36	3,551.29	3,689.75	0.58	-0.41	4.91	136.98
	NORMAL	8,032.0	4.13	66.27	6,880.96	1,003.69	3,558.24	3,697.07	0.95	-0.55	-10.17	229.88
	NORMAL	8,128.0	3.65	71.19	6,976.74	1,006.07	3,564.29	3,703.55	0.61	-0.50	5.13	147.62
	NORMAL	8,222.0	3.65	66.01	7,070.55	1,008.25	3,569.86	3,709.49	0.35	0.00	-5.51	267.42
	NORMAL	8,317.0	3.08	73.30	7,165.39	1,010.21	3,575.07	3,715.04	0.75	-0.60	7.67	146.71
	NORMAL	8,413.0	2.24	61.44	7,261.29	1,011.85	3,579.19	3,719.44	1.04	-0.88	-12.35	207.41
	NORMAL	8,508.0	1.67	62.14	7,356.23	1,013.38	3,582.04	3,722.61	0.60	-0.60	0.74	177.95
	NORMAL	8,603.0	1.54	57.22	7,451.19	1,014.72	3,584.34	3,725.18	0.20	-0.14	-5.18	224.23
2/23/2014	NORMAL	8,699.0	1.01	81.74	7,547.17	1,015.54	3,586.26	3,727.25	0.78	-0.55	25.54	145.98
	NORMAL	8,794.0	1.05	89.12	7,642.15	1,015.68	3,587.96	3,728.92	0.15	0.04	7.77	76.93
	NORMAL	8,889.0	1.05	104.85	7,737.14	1,015.47	3,589.67	3,730.51	0.30	0.00	16.56	97.86
	NORMAL	8,985.0	0.83	127.62	7,833.13	1,014.82	3,591.07	3,731.69	0.45	-0.23	23.72	131.55
	NORMAL	9,080.0	0.88	137.90	7,928.12	1,013.85	3,592.10	3,732.43	0.17	0.05	10.82	77.13
	NORMAL	9,175.0	0.83	152.75	8,023.10	1,012.70	3,592.91	3,732.89	0.24	-0.05	15.63	110.07
	NORMAL	9,270.0	0.66	167.61	8,118.10	1,011.56	3,593.34	3,733.00	0.27	-0.18	15.64	138.61
	NORMAL	9,364.0	1.01	187.65	8,212.09	1,010.21	3,593.35	3,732.64	0.48	0.37	21.32	50.15
	NORMAL	9,459.0	1.27	214.72	8,307.07	1,008.51	3,592.64	3,731.50	0.62	0.27	28.49	78.18
	NORMAL	9,554.0	1.67	230.80	8,402.04	1,006.77	3,590.96	3,729.42	0.60	0.42	16.93	54.11
	NORMAL	9,650.0	1.45	239.42	8,498.00	1,005.27	3,588.83	3,726.97	0.33	-0.23	8.98	137.41
	NORMAL	9,745.0	1.32	230.89	8,592.97	1,003.97	3,586.95	3,724.80	0.26	-0.14	-8.98	233.55
	NORMAL	9,840.0	1.58	220.52	8,687.94	1,002.28	3,585.25	3,722.71	0.39	0.27	-10.92	309.47
	NORMAL	9,936.0	1.41	222.89	8,783.91	1,000.41	3,583.59	3,720.61	0.19	-0.18	2.47	161.19
	NORMAL	9,990.0	1.76	218.32	8,837.89	999.27	3,582.62	3,719.37	0.69	0.65	-8.46	337.85
2/24/2014	NORMAL	10,040.0	1.76	218.32	8,887.87	998.07	3,581.67	3,718.13	0.00	0.00	0.00	0.00